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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

TITLE: IMPROVED VEHICLE BATTERY  
TERMINAL CONNECTOR

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## BACKGROUND OF THE INVENTION

## 1. Field of The Invention

The present invention relates to electrical connectors, and in particular to connectors used to connect electrical cables to vehicle batteries.

## 2. Background Information

A deficiency presently exists with respect existing battery terminals or connectors, as used with conventional post-type vehicle batteries.

As is well known to anyone who has had to remove or replace a car or truck battery, conventional terminals are very difficult to use. Even if the connectors are in perfect shape, a wrench (or often two wrenches) are required to properly loosen or re-tighten the terminal for proper engagement with the battery posts.

Far too often, a wrench of the correct size is not available, and pliers, channel locks, or the like are used, with the inevitable damage to the bolt and nut heads. This, in turn, makes the next removal/installation process even more difficult, and risks other than a proper re-

1 installation for lack of ability to properly tighten the  
2 terminal.

3 Even if a wrench of the proper size is available,  
4 removing and re-installing a battery terminal on a vehicle  
5 battery is simply inconvenient. Worse still is the  
6 replacement of the battery terminal itself, when the  
7 existing terminal becomes unserviceable. Replacing a  
8 terminal requires still another sized wrench or socket for  
9 removing and re-attaching the terminal to the vehicle's  
10 electrical cables.

11 It would well serve vehicle owners, or those who  
12 service vehicles for owners, to provide an improved design  
13 for a vehicle battery terminal - one which is more easily  
14 removed and replaced, preferably without requiring tools of  
15 any kind.

#### 16 17 SUMMARY OF THE INVENTION

18 In view of the foregoing, it is an object of the  
19 present invention to provide an improved vehicle battery  
20 terminal.

1           It is another object of the present invention to  
2 provide an improved vehicle battery terminal which is more  
3 easily removed or installed than conventional such  
4 terminals.

5           It is another object of the present invention to  
6 provide an improved vehicle battery terminal which is more  
7 easily removed or installed than conventional such  
8 terminals, and requires no tools for doing so.

9           In satisfaction of these and other related objectives,  
10 Applicant's present invention provides an improved battery  
11 terminal for use with vehicle type batteries with posts.  
12 The present terminal eliminates the need for tools to either  
13 install or remove the terminal vis a vis the vehicles  
14 battery posts, or to remove the terminal itself from the  
15 vehicle's electrical cables.

16           The preferred embodiment of the present invention  
17 includes two cam/lever assemblies which, upon actuation,  
18 reversibly enlarge or reduce the respective interior  
19 dimensions of the terminal's battery post-reception aperture  
20 or cable reception orifice for, respectively, engaging or

1 releasing the battery post or electrical cable's terminal  
2 end situated therein.  
3

#### 4 BRIEF DESCRIPTION OF THE DRAWINGS

5 Fig. 1 is a perspective view of one embodiment of the  
6 improved battery terminal of the present invention.

7 Fig. 2 is a perspective view of a second embodiment of  
8 the improved battery terminal of the present invention.

9 Fig. 3 is a perspective view of a third embodiment of  
10 the improved battery terminal of the present invention.

11 Fig. 4 is a perspective view of the preferred  
12 embodiment of the present invention.  
13

#### 14 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

15 With reference to Figure 1, the a first embodiment of  
16 the battery terminal of the present invention is identified  
17 generally by the reference number 10.

18 Battery terminal 10 includes a body member 12 of which  
19 several sub-components are integral parts, in the preferred  
20 embodiment.

1           Body member 12 includes a post-engagement means 14  
2           which, in the preferred embodiment, constitutes a C-shaped  
3           structure which, in turn, defines a post-reception aperture  
4           16. Post-reception aperture 16 is sized and shaped to  
5           telescopically receive a conventional vehicle battery post  
6           therein (not shown in the drawings). As is conventional for  
7           vehicle battery terminals, striations or ribs 18 are formed  
8           on the annular, interior faces of post-reception aperture  
9           16, for positive "biting" of the terminal into the battery  
10          posts.

11          Extending from post engagement means 14 are two  
12          clamping tab members 20 two cooperatively aligned holes 22  
13          formed therethrough.

14          Engaged with clamping tab members 20 is a post-securing  
15          cam assembly 24. Post-securing cam assembly 24 includes a  
16          rod member 26 which extends through holes 22 of clamping tab  
17          members 20, a stop 28 which secures the engagement of rod  
18          member 26 with clamping tab members 26 and a cam lever  
19          assembly 30, with an actuating lever 32. Cam lever assembly  
20          30 and the adjacent, outer surface of post-engagement means  
21          14 are respectively configured whereby, when actuating lever

1 32 is moved to its locking position (or first position), a  
2 compressive force is applied by cam lever assembly 30  
3 whereby clamping tab members 20 are drawn closer together,  
4 thereby reducing post-reception aperture 16 in size. This,  
5 of course, effects a clamping or grasping action by post-  
6 engagement means 14 vis a vis a vehicle battery post (not  
7 shown in the drawings).

8 When actuating lever 32 is moved to its unlocked  
9 position (or second position), pressure is released, and  
10 clamping tab members 20 are allowed to return to their  
11 unstressed, more open relative position, whereby post-  
12 reception aperture 16 is enlarged (such as when a user  
13 wishes to disengage terminal 10 from his or her vehicle's  
14 battery post.

15 Another portion of body member 12 is the cable securing  
16 means 34 - that portion which positively engages the  
17 terminal 10 with the terminal end X of a vehicle's  
18 electrical cable Y. Cable securing means 34 defines a cable  
19 reception orifice 36 which is sized to receive terminal end  
20 X of electrical cable Y telescopically therein.

1           In this embodiment of the present battery terminal 10,  
2           a cable clamping cam assembly 40 is provides, which, in like  
3           structure and function to post-securing cam assembly 30,  
4           compresses cable securing means 34 (as allowed by the  
5           presence of a longitudinal slot 38) for clamping onto  
6           terminal end X.

7           A second embodiment (Fig. 2) involves a wing bolt 42,  
8           the end of which extends into cable reception orifice 36  
9           for, upon advancing wing bolt 42 into orifice 36, impinging  
10          on terminal end X, and, conversely, when moving wing bolt 42  
11          in the opposite direction, disengaging from terminal end X  
12          for allowing the removing thereof from the cable reception  
13          orifice 36. this embodiment of the present invention (see  
14          Fig. 3) also replaces post-securing cam assembly 30 with a  
15          wing bolt and nut assembly 50 as shown. This embodiment  
16          represents an improvement over presently available,  
17          conventional terminals designs.

18          As is exemplified by the embodiment shown in Fig. 3,  
19          the use of the cable securing scheme involving the wing bolt  
20          42, even with a more conventional embodiment of the post-  
21          securing structure Z, provides a substantial improvement



1 with respect to removing and attaching the terminal itself  
2 to an electrical cable Y.

3 Referring to Fig. 4, the preferred embodiment of the  
4 present invention provides for the use with a "side-pole"  
5 vehicle battery. In this embodiment, a wing bolt 60 is  
6 sized and configured for engaging the threaded receptacle of  
7 a "side-pole" battery (not shown in the drawings). In this  
8 embodiment wing bolt 60 is carried by the body 12 of the  
9 terminal 10 such that it threads into the threaded orifice  
10 which constitutes each pole of the side-pole battery, Wing  
11 bolt 42 is used to secure the electrical cable Y. Use of  
12 both wing bolts for these purposes completely eliminates the  
13 need for tools in using the terminal. A pivot or swivel  
14 joint 62 (or suitable alternative structure) may be provided  
15 for body 12 to allow for rotating the two ends of body 12  
16 such that the wing bolts 42 and 62 are oriented either the  
17 same, or differently, depending on circumstances of  
18 installation space, etc.

19 Although the invention has been described with  
20 reference to specific embodiments, this description is not  
21 meant to be construed in a limited sense. Various

1 modifications of the disclosed embodiments, as well as  
2 alternative embodiments of the inventions will become  
3 apparent to persons skilled in the art upon reference to the  
4 description of the invention. It is, therefore,  
5 contemplated that the appended claims will cover such  
6 modifications that fall within the scope of the invention.  
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